No. 8300103

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Nickerson American Plant Breeders, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S), AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Mustang'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 30th day of August in the year of our Lord one thousand nine hundred and eighty-five.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

John R. Block
Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

FORM APPROVED
OMB NO. 40-R3822

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY W361-77 s.5	1b. VARIETY NAME Mustang	FOR OFFICIAL USE ONLY PV NUMBER 8300103
2. KIND NAME Hard Red Winter Wheat	3. GENUS AND SPECIES NAME Triticum aestivum	FILING DATE 4/5/83 — TIME 9:30 A.M. ~~P.M.~~ XXX
4. FAMILY NAME (BOTANICAL) Gramineae	5. DATE OF DETERMINATION 1=Sept. 1979 2=Sept. 1981	FEE RECEIVED $ 1,000 / $ 500.00 — DATE 4/5/83 / 8/7/85
6. NAME OF APPLICANT(S) ~~North~~ NICKERSON American Plant Breeders, INC.	7. ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*) 5201 Johnson Drive, P.O. Box 2955 Mission, KS 66201	8. TELEPHONE AREA CODE AND NUMBER 913-384-4940 KS 303-532-3721 CO

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (*Corporation, partnership, association, etc.*) Partnership	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION Stamford, CT	11. DATE OF INCORPORATION March 1973

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:

R.E. HEINER ~~G.E. Dixon~~
P.O. Box 2955
Mission, KS

ROBERT F. BRUNS ~~R.E. Heiner~~ or C. Bruns
P.O. Box 30
Berthoud, CO

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] 13D. Exhibit D, Additional Description of the Variety.
- X 13E. Exhibit E., Quality Data

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? [X] YES [ ] NO

14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? [X] FOUNDATION [X] REGISTERED [X] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [X] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

February 17, 1983 (DATE) — Robert E Heiner (SIGNATURE OF APPLICANT)

March 14, 1983 (DATE) — G.E. Dixon (SIGNATURE OF APPLICANT)

FORM GR-470 (1-78)

8300103

Exhibit A

Origin and Breeding History of Mustang

PEDIGREE: II18889/Trapper//CO652643/3/Sonora/Trapper//Warrior

DATE OF CROSS: 1973

HISTORY: The breeding history of Mustang started in 1973 with the cross of CO701411 (F_6) with CO695461 (F_6). This F_1 was increased in 1974, and grown as an F_2 population in 1975. Single rows of F_3 lines were grown in 1976 at 3 locations. One of these lines was given the testing designation HW77-361. In 1979, three hundred headrows were grown in Berthoud, Colorado for purification purposes. There were many different segregates within these headrows. Mustang is one of nineteen headrows that were selected individually and put into yield trials in 1980. It was designated as HW77-361S5. Three hundred headrows were grown in 1981 and bulked for a large Breeders seed increase in 1982.

Mustang is uniform and stable. Less than 1% of the plants were rogued from the Foundation fields in 1982. Approximately 90% of these rogued plants were three to twelve centimeters taller than Mustang. Less than 0.8% of these taller plants may be encountered in subsequent generations.

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Exhibit B

Novelty Statement

Mustang is most similar to the hard red winter wheat variety Archer. However, it can be distinguished by the following morphological characteristics:

- Mustang and Archer differ significantly in beak length. (See supporting data, ~~Exhibit E~~, page 2.)
- Mustang and Archer differ in plant color at boot. Archer is green and Mustang is blue-green.
- Mustang has short glumes, Archer has medium length glumes. (See supporting data, ~~Exhibit E~~, page 3.)

EC 7/18/85

EC 7/18/85

8300103

Anova Table

Beak Lengths of Mustang and Archer

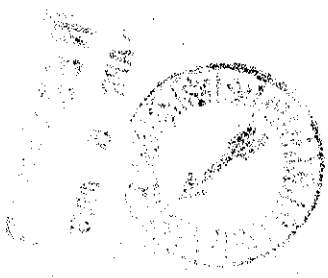
Mustang mean = 4.59

Archer mean = 3.28

Source	df	ss	ms
Total	209	1670.28	
VAR	6	756.05	126.01**
Error	203	914.23	4.50

F test = 28.00

LSD(.05) = 1.08



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A.N.O.V.A. Table for Glume Length
Mustang Vs. Archer

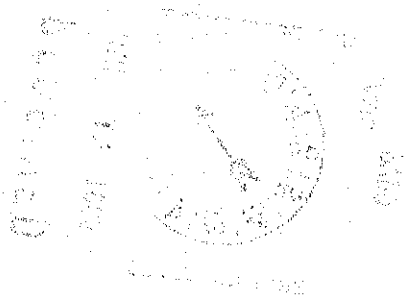
Source	df	ss	ms
Total	49	16.03	
Var	1	10.40	10.400**
Error	48	5.63	.117

F Test = 88.89**

Means

Archer 7.23 mm
Mustang 6.30 mm

** The probability that the difference in means of glume length are significantly different at the 1% alpha level.



Mustang

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT *(TRITICUM SPP.)*

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S): NICKERSON ~~North American Plant Breeders~~, INC.

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*

5201 Johnson Drive, P.O. Box 2955
Mission, KS 66201

FOR OFFICIAL USE ONLY

PVPO NUMBER: 8300103

VARIETY NAME OR TEMPORARY DESIGNATION: MUSTANG

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. 0 8 9 or 0 9) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* ______

[2] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* ______

[2] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* ______

3. SEASON - NUMBER OF DAYS FROM [redacted] planting **TO:**

[2 2 9] FIRST FLOWERING

[2 3 5] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[0 4] NO. OF DAYS *EARLIER* THAN .... [2]

[- -] NO. OF DAYS *LATER* THAN .... [-]

1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT *(From soil level to top of head)*:

[0 8 6] CM. HIGH

[- -] CM. TALLER THAN .... [-]

[1 9] CM. SHORTER THAN .... [2]

1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING *(See reverse)*:

[3] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0 4] NO. OF NODES *(Originating from node above ground)*

[1 9] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[2] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: ______

[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1 2] MM. LEAF WIDTH *(First leaf below flag leaf)*

[1 9] CM. LEAF LENGTH *(First leaf below flag leaf)*:

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Mustang

FORM GR-470-6 (REVERSE)

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3=Middense

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[6.2] CM. LENGTH [10] MM. WIDTH

12. GLUMES AT MATURITY:

[1] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[3] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE Average 4.6 mm

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[2] 1 = ABSENT 2 = PRESENT (slight)

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[5] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[06] MM. LENGTH [3.5] MM. WIDTH [36] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3=Moderate Resistant 4=Moderate Susceptible

[3] STEM RUST (Races) 15 & 151

[4] LEAF RUST (Races) Field Races

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[0] POWDERY MILDEW

[0] BUNT

[2] OTHER (Specify) Soil Borne Mosaic Virus

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3=Moderate Resistant

[0] SAWFLY

[0] APHID (Bydv.)

[1] GREEN BUG

[0] CEREAL LEAF BEETLE

[-] OTHER (Specify) _____

HESSIAN FLY RACES:

[3] GP [0] A [0] B [0] C

[0] D [0] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Archer	Seed size	Archer
Leaf size	Archer	Seed shape	Archer
Leaf color	Archer	Coleoptile elongation	Archer
Leaf carriage	Archer	Seedling pigmentation	Archer

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

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Exhibit D

Additional Description of Mustang

Mustang is a hard red winter wheat tested as HW77-361S5. It was bred and developed by ~~North~~ Nickerson American Plant Breeders, Inc.

Mustang is a short to intermediate height semidwarf variety with very strong straw strength, early maturity and moderate winterhardiness. Milling and baking properties are good.

Juvenile plant growth habit is semi-erect. Plant color at boot is blue-green, with an erect twisted flag leaf. Head shape is tapering, middense, and awned. Head color is white at maturity. Glumes are short in length, medium in width with a rounded to oblique shoulder shape. Beaks are acuminate. Seed shape is ovate with rounded cheeks. Brush hairs are midlong and occupy a large area of the seed. Seed crease width is narrow and depth is shallow.

Mustang is adapted to Kansas, Oklahoma, Colorado, Texas and the southern tier of counties in Nebraska.

North American Plant Breeders

YEAR: 1982 HARD RED WINTER WHEAT QUALITY PAGE 1

			WHEAT--FLOUR QUALITY						BAKING QUALITY									
YEAR	SAMPLE NAME	LOC	TEST WT.	WHT PROT	FLR YLD	FLR PROT	FLR ASH	MIX CURVE	ABS.	MIX TIME	DOUGH CHAR	LOAF VOL	CRUMB GRN	CRUMB TEX	CRUMB COL	MILL SCORE	BAKE SCORE	TOTAL SCORE
			lb/Bu	14%mb	%	14%mb	14%mb	R	%	min	R	cc	R	R	R			
80	HW77-36155	CK	61.4	12.5	73.0	11.3	0.367	7	60.0	6.0	8	970	7	7	9	85-B	76-C	161-B
81	HW77-36155	SD	62.0	12.4	71.5	12.0	0.365	7	62.0	4.0	9	750	7	8	8	87-B	79-C	166-B
81	HW77-36155	LK	58.4	13.7	73.1	12.6	0.424	8	64.0	3.0	9	1000	8	9	9	89-B	92-A	181-A
81	HW77-36155	HN	59.8	13.9	72.2	13.0	0.354	6	64.0	2.5	8	1000	7	9	9	80-B	89-B	177-B
81	HW77-36155	BR	62.0	12.3	72.7	11.3	0.387	5	62.0	2.3	8	890	8	9	8	78-C	78-C	156-C
82	HW77-36155	ED	52.7	13.0	67.1	11.7	0.367	6	61.0	5.0	9	900	8	9	8	65-D	83-B	148-C
82	HW77-36155	EO	55.7	12.5	71.5	11.1	0.424	6	63.0	4.8	8	800	8	8	8	72-C	83-B	155-C
82	HW77-36155	LK	57.6	12.1	72.8	11.3	0.535	6	61.0	3.0	8	860	7	8	8	75-C	78-C	153-C
82	HW77-36155	LK	56.9	11.8	73.3	10.8	0.000	6	60.0	3.8	8	775	8	7	9	71-C	75-C	146-C
82	HW77-36155	CK	58.6	12.2	75.4	10.9	0.407	6	62.0	3.8	9	830	8	8	9	76-C	83-B	159-C
	AVERAGE		58.3	12.6	72.2	11.6	0.363	6	61.9	3.8	8	878	8	8	9	81-B	82-B	163-B
80	NEWTON	CK	59.8	12.3	70.9	11.3	0.436	8	62.0	5.0	8	895	7	7	9	81-B	80-B	161-B
81	NEWTON	SD	61.8	11.9	68.5	11.1	0.400	7	61.0	3.5	9	790	8	8	9	75-C	80-B	155-C
81	NEWTON	LK	56.8	13.5	69.8	12.3	0.443	7	62.0	3.0	9	1000+	8	9	9	78-C	90-A	168-B
81	NEWTON	HN	59.9	11.5	70.4	10.5	0.333	6	59.0	3.5	8	875	8	8	9	72-C	78-C	150-C
81	NEWTON	BR	62.0	12.5	73.4	12.0	0.386	5	63.0	2.0	8	810	7	8	9	83-B	77-C	160-B
82	NEWTON	ED	48.3	13.6	63.3	12.8	0.376	7	64.0	3.8	8	1000	7	8	9	60-D	92-A	160-B
82	NEWTON	EO	52.7	13.0	63.3	11.7	0.385	5	61.0	4.5	8	950	9	9	9	59-F	88-B	147-C
82	NEWTON	LK	59.9	12.1	69.8	10.9	0.357	6	62.0	4.0	9	750	7	7	8	72-C	78-C	150-C
82	NEWTON	LK	57.5	11.7	70.2	10.5	0.000	6	59.0	4.3	9	725	8	7	8	69-D	72-C	141-C
82	NEWTON	CK	56.2	11.5	70.3	10.1	0.397	5	60.0	4.3	9	830	8	9	9	63-D	81-B	144-C
	AVERAGE		57.5	12.4	69.0	11.3	0.355	6	61.3	3.8	9	868	8	8	9	71-C	83-B	154-C

GRADES: A-EXCELLENT B-GOOD C-ACCEPTABLE D-QUESTIONABLE F-UNACCEPTABLE
R-RATINGS: 9-10-EXCELLENT 8-GOOD 7-ACCEPTABLE 5-6-QUESTIONABLE 1-4-UNACCEPTABLE

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